**What is claimed is:**

1. A method for slowing the degradation rate of a biodegradable polymer or biodegradable polymer composition, wherein the method comprises:

a. introducing a phenol-containing compound comprising a terpene-phenol resin into a biodegradable polymer or biodegradable polymer composition in an amount sufficient to slow the degradation rate of the biodegradable polymer or biodegradable polymer composition; and

b. mixing the phenol-containing compound with the biodegradable polymer or biodegradable polymer composition.

2. The method of claim 1 wherein the terpene-phenol resin comprises from about 1 to about 40 % by weight of phenol as measured by weight of the compound.

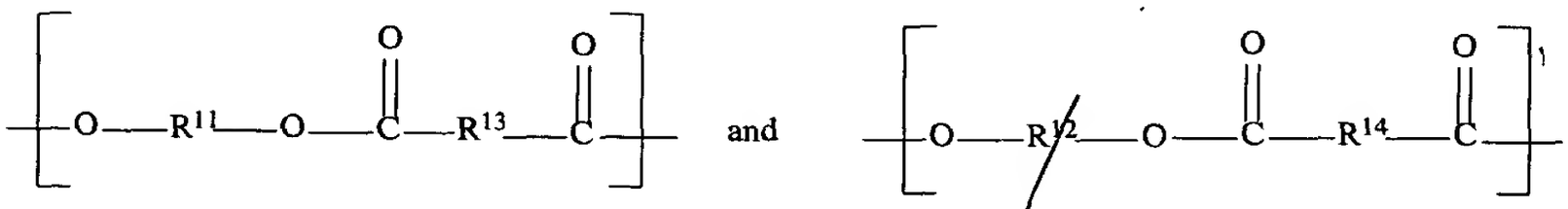
3. The method of claim 1 wherein the terpene-phenol resin comprises from about 5 to about 20 % by weight of phenol as measured by weight of the compound.

4. The method of claim 1 wherein the phenol-containing compound is present in the biodegradable polymer or biodegradable polymer composition at from about 0.5 to about 10 weight % as measured by the total weight of the biodegradable polymer or biodegradable polymer composition.

5. The method of claim 1 wherein the phenol-containing compound is present in the biodegradable polymer or biodegradable polymer composition at from about 1 to about 3 weight % as measured by the total weight of the biodegradable polymer or biodegradable polymer composition.

6. The method of claim 1 wherein the biodegradable polymer or biodegradable polymer composition comprises one or more of:

a) an aliphatic-aromatic copolyester having repeat units of the following structures:



and



wherein:

(i) $R^{11}$ and $R^{12}$ are the same or different, and are residues of one or more of: diethylene glycol, propylene glycol, 1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 1,3-butanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 2,2,4-trimethyl-1,6-hexanediol, thiodiethanol, 1,3-cyclohexanedimathanol, 1,4-cyclohexanedimethanol, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, triethylene glycol, or tetraethylene glycol;

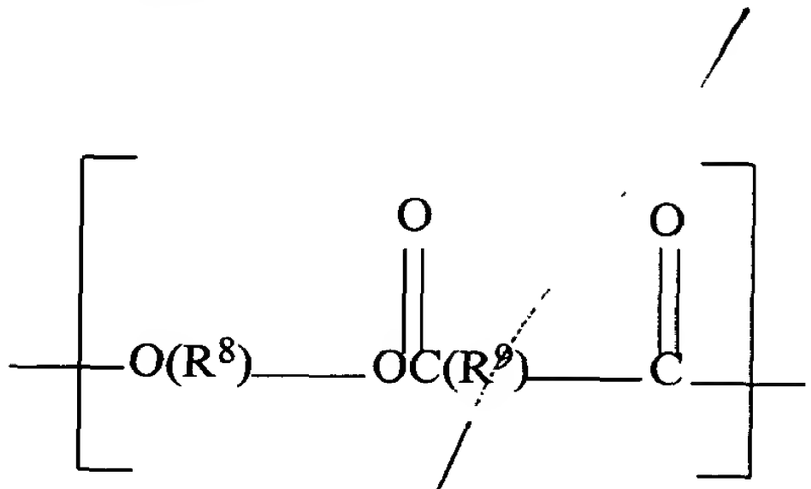
(ii) $R^{11}$ and $R^{12}$ are 100% of the diol components in the copolyester;

(iii) $R^{13}$ is absent or is selected from one or more of the groups consisting of $C_1$ - $C_{12}$ alkylene or oxyalkylene; $C_1$ - $C_{12}$ alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$ - $C_{10}$ aryl, and $C_1$ - $C_4$ alkoxy; $C_5$ - $C_{10}$ cycloalkylene; and $C_5$ - $C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$ - $C_{10}$ aryl, and $C_1$ - $C_4$ alkoxy; and

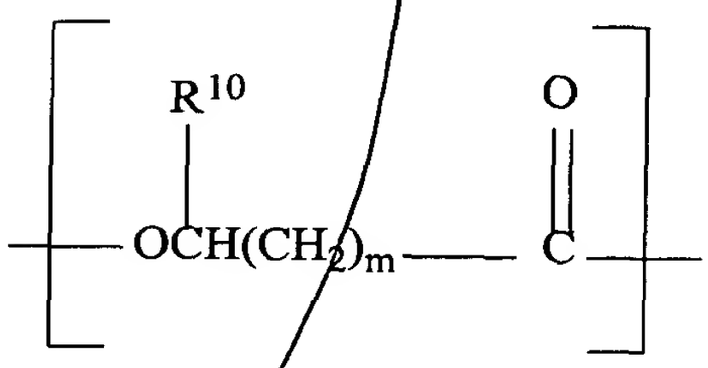
(iv) $R^{14}$ is selected from one or more of the groups consisting of $C_6$ - $C_{10}$ aryl, and $C_6$ - $C_{10}$ aryl substituted with one to four substituents independently selected from the group consisting of halo, $C_1$ - $C_4$ alkyl, and $C_1$ - $C_4$ alkoxy;

b) an aliphatic polyester having repeat units of one or more of the

following structures:



or



wherein m is an integer of from 0 to 10, and $R^{10}$ is selected from the group consisting of hydrogen; $C_1$-$C_{12}$ alkyl; $C_1$-$C_{12}$ alkyl substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkyl; and $C_5$-$C_{10}$ cycloalkyl substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy,

wherein $R^8$ is selected from the group consisting of $C_2$-$C_{12}$ alkylene or $C_2$-$C_{12}$ oxyalkylene; $C_2$-$C_{12}$ alkylene or $C_2$-$C_{12}$ oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkylene; $C_5$-$C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy, and

wherein $R^9$ is absent or is selected from one or more of the groups consisting of

$C_1$-$C_{12}$ alkylene or oxyalkylene; $C_1$-$C_{12}$ alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkylene; and $C_5$-$C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; or

c) a $C_1$-$C_{10}$ cellulose ester having a DS equal to or less than about 2.5.

7. The method of claim 6 wherein the biodegradable polymer or biodegradable polymer composition comprises the aliphatic-aromatic copolyester and wherein $R^{11}$ and $R^{12}$ are the same or different, and are selected from the group consisting of residues of one or more of glycol, propylene glycol, 1,3-propanediol, or 1,3-butanediol, and 1,4-butanediol, $R^{13}$ is selected from the group consisting of malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, 2,2-dimethyl glutaric acid, diglycolic acid, and an ester forming derivative thereof, and $R^{14}$ is selected from the group consisting of one or more of 1,4-terephthalic acid, 1,3-terephthalic acid, 2,6-naphthoic acid, 1,5-naphthoic acid, and an ester forming derivative thereof.

8. The method of claim 1 wherein the biodegradable polymer or biodegradable polymer composition comprises one or more of: poly(vinyl alcohol), poly(etyhylene-*co*-vinyl alcohol), poly(vinyl acetate), poly(ethylene-*co*-vinyl acetate), poly(glycolic acid), poly(lactic acid), polycaprolactone, poly(alkylene D-tartrate), polyρ-dioxanone, polyorthoformate, poly(oxyethylene glycoates), polyethylene oxide, and polyhydroxyalkanoate.

9. The method of claim 1, wherein the biodegradable polymer or biodegradable polymer composition comprises one or more of: a pigment, a dye, an opacifying agent, an antioxidant, an ultraviolet stabilizer, an optical brightener,

an aliphatic acid, a metal salt, an antistatic agent, an antiblocking aid, a filler, a dispersing agent, a coating aid, a slip agent, a lubricant, starch, wood, and flour.

10. A method for slowing the degradation rate of a biodegradable polymer or biodegradable polymer composition, wherein the method comprises:

(a) introducing a phenol-containing compound into a biodegradable polymer or biodegradable polymer composition in an amount sufficient to slow the degradation rate of the biodegradable polymer or biodegradable polymer composition; and

(b) mixing the phenol-containing compound with the biodegradable polymer or biodegradable polymer composition.

11. The method of claim 10, wherein the phenol-containing compound comprises one or more of: terpene-phenol resin, poly(vinylphenol), phenolic antioxidant, and a material capable of releasing a phenol upon hydrolysis.

12. The method of claim 11, wherein the phenol containing compound comprises the phenolic antioxidant and wherein the phenolic antioxidant comprises one or more of: 4,4'-thio-bis(2-t-butyl-5-methylphenol), polymeric alkylated phenol, 2,5-di-t-amylhydroquinone, 1,1-di-(2-methyl-4-hydroxy-5-t-butylphenyl)butane, and 1,1'-thio-bis(2-hydroxynaphthalene).

13. The method of claim 11, wherein the phenol-containing material comprises a material capable of releasing a phenol upon hydrolysis and comprises one or more of: diphenyl-isodecyl phosphite, diisodecylphenyl phosphite, tris(p-nonylphenyl)phosphite, and tris[3-methyl-4-(2-methyl-4-hydroxy-5-t-butylphenylthio)-6-t-butyl)phosphite.

14. The method of claim 10 wherein the phenol-containing material comprises terepene-phenol resin, phenolic antioxidant, or a material capable of releasing phenol upon hydrolysis and wherein the material contains from about 1 to about 40 % by weight of phenol as measured by weight of the compound.

15. The method of claim 10 wherein the phenol-containing material comprises terepene-phenol resin, phenolic antioxidant, or a material capable of releasing phenol upon hydrolysis and wherein the material contains from about 5 to about 20 % by weight of phenol as measured by weight of the compound.

16. The method of claim 10, wherein the phenol-containing compound comprises poly(vinylphenol) and wherein the poly(vinylphenol) comprises less than or equal to about 77.5 % by weight of phenol as measured by weight of the compound.

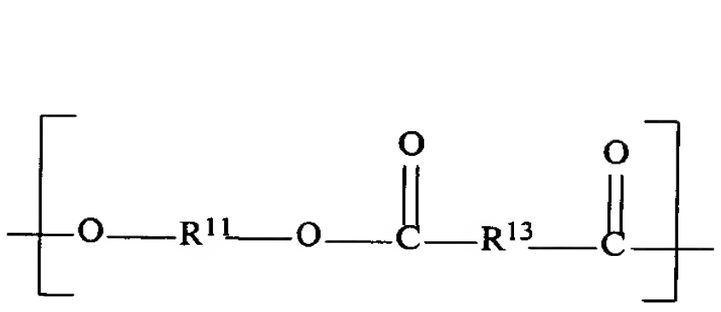
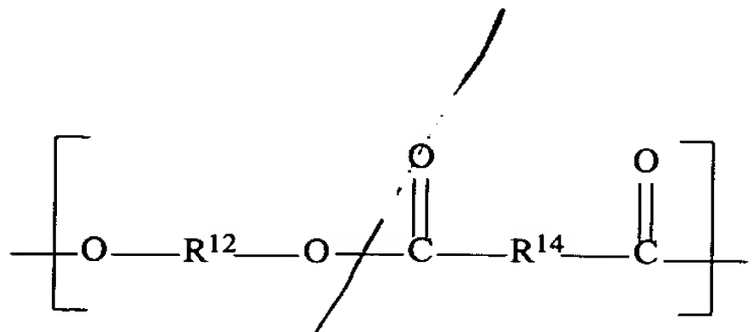
17. The method of claim 10 wherein the phenol-containing compound is present in the biodegradable polymer or biodegradable polymer composition at from about 0.2 to about 10 % by weight as measured by total weight of the biodegradable polymer or biodegradable polymer composition.

18. The method of claim 10 wherein the phenol-containing compound is present in the biodegradable polymer or biodegradable polymer composition at from about 1 to about 3 % by weight as measured by total weight of the biodegradable polymer or biodegradable polymer composition.

19. The method of claim 10 wherein the biodegradable polymer or biodegradable polymer composition comprises one or more of:

a) an aliphatic-aromatic copolyester having repeat units of the following

structures:


and


wherein:

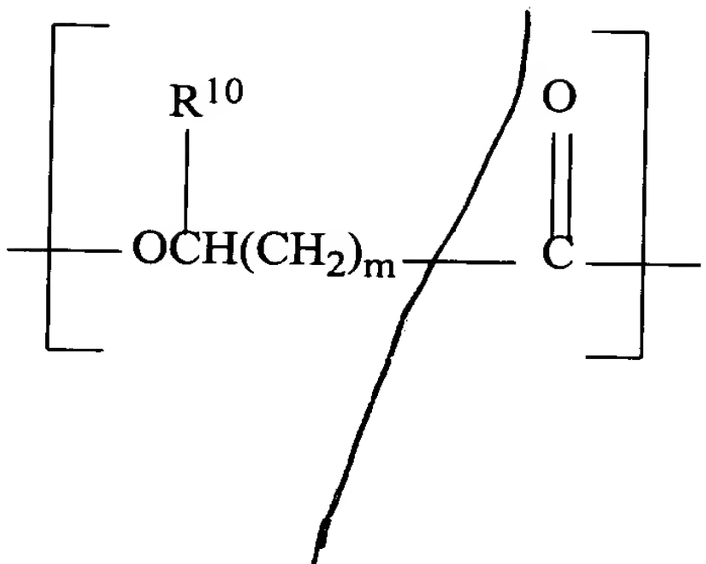
(i) $R^{11}$ and $R^{12}$ are the same or different, and are residues of one or more of diethylene glycol, propylene glycol, 1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 1,3-butanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 2,2,4-trimethyl-1,6-hexanediol, thiodiethanol, 1,3-cyclohexanedimethanol, 1,4-cyclohexanedimethanol, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, triethylene glycol, or tetraethylene glycol;

(ii) $R^{11}$ and $R^{12}$ are 100% of the diol components in the copolyester;

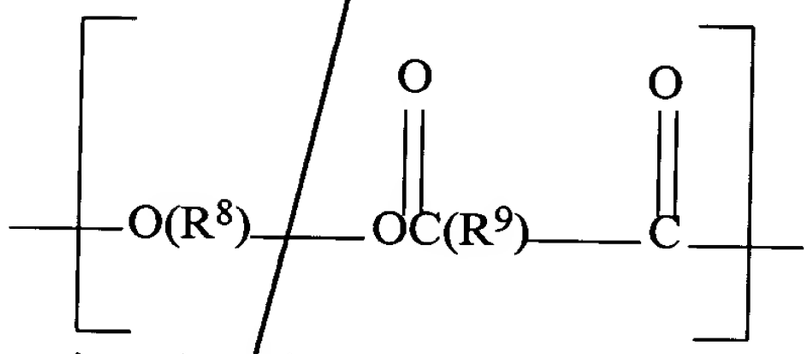
(iii) $R^{13}$ is absent or is selected from one or more of the groups consisting of $C_1$ - $C_{12}$ alkylene or oxyalkylene; $C_1$ - $C_{12}$ alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$ - $C_{10}$ aryl, and $C_1$ - $C_4$ alkoxy; $C_5$ - $C_{10}$ cycloalkylene; and $C_5$ - $C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$ - $C_{10}$ aryl, and $C_1$ - $C_4$ alkoxy; and

(iv) $R^{14}$ is selected from one or more of the groups consisting of $C_6$ - $C_{10}$ aryl, and $C_6$ - $C_{10}$ aryl substituted with one to four substituents independently selected from the group consisting of halo, $C_1$ - $C_4$ alkyl, and $C_1$ - $C_4$ alkoxy;

b) an aliphatic polyester having repeat units of one or more of the following structures:



or



wherein m is an integer of from 0 to 10, and $R^{10}$ is selected from the group consisting of hydrogen; $C_1$-$C_{12}$ alkyl; $C_1$-$C_{12}$ alkyl substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkyl; and $C_5$-$C_{10}$ cycloalkyl substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy, wherein $R^8$ is selected from the group consisting of $C_2$-$C_{12}$ alkylene or $C_2$-$C_{12}$ oxyalkylene; $C_2$-$C_{12}$ alkylene or $C_2$-$C_{12}$ oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkylene; $C_5$-$C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl,

and $C_1$-$C_4$ alkoxy, and

wherein $R^9$ is absent or is selected from one or more of the group consisting of $C_1$-$C_{12}$ alkylene or oxyalkylene; $C_1$-$C_{12}$ alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkylene; and $C_5$-$C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; or

c) a $C_1$-$C_{10}$ cellulose ester having a DS equal to or less than about 2.5.

20. The method of claim 10 wherein the biodegradable polymer or biodegradable polymer composition comprises one or more of: poly(vinyl alcohol), poly(etyhylene-*co*-vinyl alcohol), poly(vinyl acetate), poly(ethylene-*co*-vinyl acetate), poly(glycolic acid), poly(lactic acid), polycaprolactone, poly(alkylene D-tartrate), polyp-dioxanone, polyorthoformate, poly(oxyethylene glycoates), polyethylene oxide, and polyhydroxyalkanoate.

21. The method of claim 10 wherein the biodegradable polymer or biodegradable polymer composition further comprises one or more of: a pigment, a dye, an opacifying agent, an antioxidant, an ultraviolet stabilizer, an optical brightener, an aliphatic acid, a metal salt, an antistatic agent, an antiblocking aid, a filler, a dispersing agent, a coating aid, a slip agent, a lubricant, starch, wood, and flour.

22. A biodegradable polymer composition comprising:

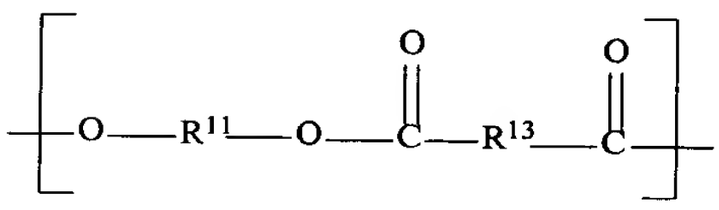
a. a biodegradable polymer or biodegradable polymer-second material composition; and

b. a phenol-containing compound comprising terpene-phenol resin

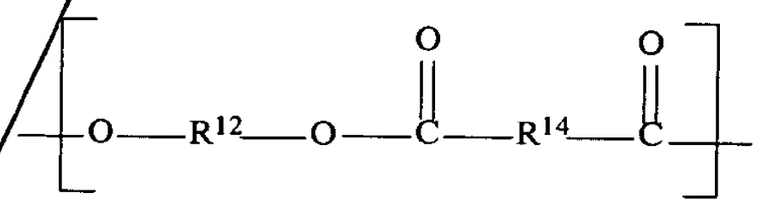
incorporated in the biodegradable polymer or biodegradable polymer-second material composition, the phenol-containing compound being present at an amount sufficient to slow the degradation rate of the biodegradable polymer or biodegradable polymer second-material composition.

23. The biodegradable polymer composition of claim 22 wherein the biodegradable polymer or biodegradable polymer-second material composition comprises one or more of the following:

a) an aliphatic-aromatic copolyester having repeat units of the following structures:




and




wherein

(i) $R^{11}$ and $R^{12}$ are the same or different, and are residues of one or more of diethylene glycol, propylene glycol, 1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 1,3-butanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 2,2,4-trimethyl-1,6-hexanediol, thiodiethanol, 1,3-cyclohexanedimathanol, 1,4-cyclohexanedimethanol, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, triethylene glycol, or tetraethylene glycol;

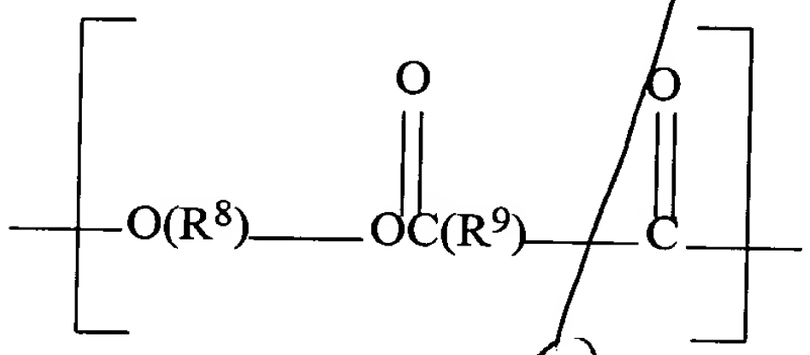
(ii) $R^{11}$ and $R^{12}$ are 100% of the diol components in the copolyester;

(iii) $R^{13}$ is absent or is selected from one or more of the groups consisting of $C_1$ - $C_{12}$ alkylene or oxyalkylene; $C_1$ - $C_{12}$ alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$ -

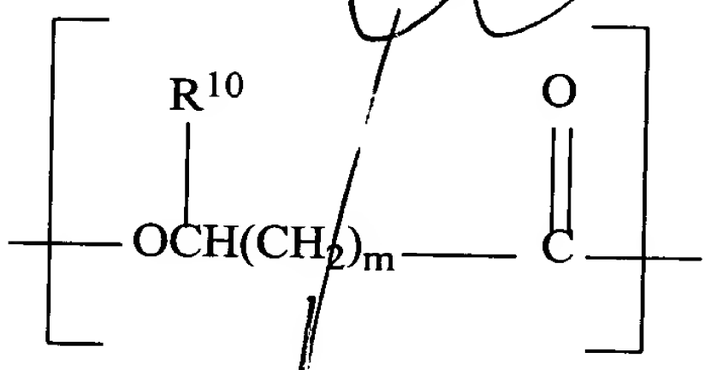
$C_{10}$ aryl, and $C_1$ - $C_4$ alkoxy; $C_5$ - $C_{10}$ cycloalkylene; and $C_5$ - $C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$ - $C_{10}$ aryl, and $C_1$ - $C_4$ alkoxy; and

(iv) $R^{14}$ is selected from one or more of the groups consisting of $C_6$ - $C_{10}$ aryl, and $C_6$ - $C_{10}$ aryl substituted with one to four substituents independently selected from the group consisting of halo, $C_1$ - $C_4$ alkyl, and $C_1$ - $C_4$ alkoxy;

b) an aliphatic polyester having repeat units of one or more of the following structures:



or



wherein m is an integer of from 0 to 10, and $R^{10}$ is selected from the group consisting of hydrogen; $C_1$-$C_{12}$ alkyl; $C_1$-$C_{12}$ alkyl substituted with one to four substituents independently selected from the group

consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkyl; and $C_5$-$C_{10}$ cycloalkyl substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy, wherein $R^8$ is selected from the group consisting of $C_2$-$C_{12}$ alkylene or $C_2$-$C_{12}$ oxyalkylene; $C_2$-$C_{12}$ alkylene or $C_2$-$C_{12}$ oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkylene; $C_5$-$C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy, and

wherein $R^9$ is absent or is selected from one or more of the group consisting of $C_1$-$C_{12}$ alkylene or oxyalkylene; $C_1$-$C_{12}$ alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; $C_5$-$C_{10}$ cycloalkylene; and $C_5$-$C_{10}$ cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, $C_6$-$C_{10}$ aryl, and $C_1$-$C_4$ alkoxy; and

b) a $C_1$-$C_{10}$ cellulose ester having a DS equal to or less than about 2.5.

24. The biodegradable polymer composition of claim 23 wherein the biodegradable polymer or biodegradable polymer-second material composition comprises the aliphatic-aromatic copolyester and wherein $R^{11}$ and $R^{12}$ are the same or different, and are selected from the group consisting of residues of one or more of glycol, propylene glycol, 1,3-propanediol, 1,3-butanediol, and 1,4-butanediol, $R^{13}$ is selected from the group consisting of malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, 2,2-dimethyl glutaric acid, diglycolic acid, and an ester forming derivative thereof, and $R^{14}$ is selected from the group consisting of one or more of 1,4-terephthalic acid, 1,3-terephthalic acid, 2,6-naphthoic acid,

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1,5-naphthoic acid, and an ester forming derivative thereof.

25. The biodegradable polymer composition of claim 22 wherein the phenol-containing compound comprises from about 1 to about 40 % by weight of phenol as measured by weight of the compound.

26. The biodegradable polymer composition of claim 22 wherein the phenol-containing compound is present in the biodegradable polymer composition in amount of from about 0.5 to about 10 weight % as measured by weight of the biodegradable polymer composition.

27. The biodegradable polymer composition of claim 22 wherein the phenol-containing compound is present in the biodegradable composition in an amount of from about 1 to about 3 weight % as measured by weight of the biodegradable polymer composition.

28. The biodegradable polymer composition of claim 22, further comprising one or more of a pigment, a dye, an opacifying agent, an antioxidant, an ultraviolet stabilizer, an optical brightener, an aliphatic acid, a metal salt, an antistatic agent, an antiblocking aid, a filler, a dispersing agent, a coating aid, a slip agent, a lubricant, starch, wood, and flour.